REMARKS

This Preliminary Amendment is being filed together with a RCE.

In the Advisory Action mailed October 16, 2003, Claims 8-21, 23, 25-31, 33 and 35-55 stood rejected under 35 U.S.C. 103(a) as being unpatentable over Garg et al. (U.S. Patent No. 4,902,535) in view of Tate (Japanese Patent No. 61035868) and further in view of Malaczynski et al. (U.S. Patent No. 5,458,927) and further in view of in view of Potter et al. (U.S. Patent No. 5,783,261). In addition, claims 24 and 32 stood rejected under 35 U.S.C. 103(a) as being unpatentable over Garg et al. (U.S. Patent No. 4,902,535) in view of Tate (Japanese Patent No. 61035868) and further in view of Malaczynski et al. (U.S. Patent No. 5,458,927) and further in view of in view of Potter et al. (U.S. Patent No. 5,783,261) and further in view of Kohler (U.S. Patent No. 5,286,534) and further in view of Mahoney (U.S. Patent No. 6,082,962). Finally, claims 22 and 34 stood rejected under 35 U.S.C. 103(a) as being unpatentable over Garg et al. (U.S. Patent No. 4,902,535) in view of Tate (Japanese Patent No. 61035868) and further in view of Malaczynski et al. (U.S. Patent No. 5,458,927) and further in view of in view of Potter et al. (U.S. Patent No. 5,783,261) and further in view of Naik (U.S. Patent No. 4,919,773).

By the foregoing amendments, Applicants have first amended many of the claims as described above and below. Applicants have also cancelled claims 14, 23, 31 and 35-55 as a result of the present amendment. Further, Applicants have added new claims 56-67. As a result of these amendments, claims 8-13, 15-22, 24-30, 32, 33 and 56-67 are currently pending in the application.

Applicants respectfully suggest that the Examiner has not established a *prima facie* case of obviousness as required by MPEP 2143 because the combination of references does not disclose or suggest all of the limitations as contained in independent claims 8, 16, 25. In addition, Applicants respectfully suggest that the vast commercial success, in response to a long-felt commercial need, established by the present claimed

method, specifically contradicts the Examiner's conclusion that there was a motivation to combine the references to arrive at the present claimed method. Further, even if the Examiner has established a *prima facie* case of obviousness, which Applicants do not concede, these same factors of long-felt commercial need and vast commercial success qualify as secondary considerations that rebut the *prima facie* case that makes independent claims 8, 16 and 25 allowable over the cited prior art. Applicants will be supplying a Rule 132 Affidavit in support of these propositions. The rationale for Applicants' positions is explained in further detail below:

In the present application, independent claim 8 has been amended to incorporate the subject matter of previously presented claim 14. In addition, independent claim 16 has been amended to incorporate the subject matter of previously presented claim 23, while independent claim 25 has been amended to incorporate the subject matter of previously presented claim 31. Each of these independent claims describe a method for applying a wear resistant, silicon-doped carbon coating to an outer surface of either an aluminum bell cup, a titanium bell cup (with an adhesion promoter), and a piece of spray equipment.

Section 2143 of the Manual of Patent Examining Procedure states that three basic criteria must be met for establishing a *prima facie* case of obviousness, stating:

> "First, there must some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach all of the claim limitations."

"If the examiner does not establish a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness." Section 2142 MPEP, ch. 2100, p. 110. "When the references cited by the Examiner fail to establish a *prima facie* case of obviousness, the rejection is improper and will be overturned."[1] One cannot use hindsight reconstruction, picking and choosing among isolated disclosures in the prior art, to deny that the claimed invention is unobvious.[2]

For reasons stated in the previous Office Actions, Tate does not teach the addition of a silicon-doped carbon coating to an outer surface of the aluminum bell cup as in amended claim 8, but instead teaches a nitride hardening treatment to a portion of the underlying substrate. As stated in the McGraw-Hill Dictionary of Scientific and Technical Terms (previously attached in Responses to Office Actions), and is well known to those of ordinary skill in the art, a nitride is defined as "compounds of nitrogen and a metal", while nitriding is defined as "surface hardening of steel by formation of nitrides; nitrogen is introduced into the steel usually by heating gaseous ammonia". In other words, the metal on the surface is reacted with the nitrogen to form nitrides (here, an aluminum alloy), thus hardening the surface to improve durability. Applicants are happy to supply an additional Rule 1.131/1.132 Affidavit to support the proposition that a nitriding treatment is not the same as a silicon-doped carbon coating applied to the outer surface of the aluminum bell cup.

Similarly, Tate does not teach the addition of a silicon-doped carbon coating to the adhesion promoter layer of amended claim 16, nor does Tate teach the addition of a silicon-doped carbon coating to the outer surface of the spray application equipment of amended claim 25.

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1 In re Ochiai, 71 F.3d 1565, 37 U.S.P.Q.2d 1127 (Fed. Cir. 1995), *citing* In re Fine, 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).
2 In re Fine, 837 F.2d at 1075.

Further, as the Examiner acknowledges in previous Office Actions, Garg et al. is not directed at an aluminum bell cup. Further, Garg et al. does not apply a wear resistant coating directly to the surface of an aluminum article, but instead applies a coating to a noble layer intermediate, which is used to improve adhesion of the coating.

Also, Malaczynski et al. describes a process for forming a diamond-like carbon coating on an aluminum alloy workpiece, preferably automobile components such as pistons, and includes successive immersion steps in different plasma atmospheres to clean the surface of oxygen atoms. Malaczynski then implants a carbide compound while codepositing a carbonaceous layer on the surface, bombards and removes the carbonaceous layer, and to thereafter deposits an amorphous hydrogen containing carbon layer. Malaczynski does not teach a step of preparing the outer surface including a cleaning, etching, and rinsing step prior to an atomic cleaning step. Malaczynski also requires an implantation of a carbide compound step and codepositing of a carbonaceous layer prior to the argon bombardment step that the present claimed method does not require. Thus, Malaczynski et al. does not apply a silicon-doped carbon coating as described in claims 8, 16 and 23.

Further, while Potter teaches degreasing a steel surface before applying a coating in automotive applications, it does not teach the actual application of the silicon doped carbon coating to spray equipment as described in claims 8, 16, and 23.

Naik discloses a method for improving the erosion resistance of metallic substrates by first applying a layer of group VI to group VIII or a noble metal (which includes chromium) followed by a layer of a boride, carbide, oxide, or nitride of a metal selected from a Group III to IV element. The Naik reference also teaches the steps of cleaning the surface with detergent, an acidic solution or an alkaline solution.

The present claimed method does not utilize a boride, carbide, oxide, or nitride of a metal of a Group III to IV element as a wear resistant coating, nor does it add this wear resistant coating layer to a group VI or VII layer, as in the Naik reference. Instead, it adds a silicon-doped carbon based wear resistant coating to an adhesion promoter layer applied to an outer surface of a titanium bell cup.

Kohler discloses a process of plasma deposition of a carbon rich coating on a polymeric and flexible substrate (see column 2, lines 28-34) for magnetic recording media. As indicated in column 6, the composition of the feed gas includes a carbon source and silicon containing hydrocarbons, but also includes nitrogen and oxygen containing hydrocarbons that the present claimed method does not contemplate. Kohler is not therefore directed towards bell cups or other spray apparatus or anything remotely related to paint application equipment.

Mahoney teaches the application of a diamond like carbon and silicon doped coating onto a silicon wafer or metal disk from a Hall-Current ion source apparatus to form magnetic transducers and media for magnetic storage equipment. The present claimed method does not contemplate the use of the particular ion source apparatus disclosed herein. Further, Mahoney is not directed towards bell cups or other spray apparatus or anything remotely related to paint application equipment.

Applicants thus respectfully suggest that the combination of the references disclosed above does not teach the present claimed method as claimed in independent claims 8, 16, and 23, as required by MPEP 2143. Even if the combination of references does disclose the presently claimed method, which Applicants do not concede, Applicants respectfully suggest that the combination of at least four, and sometimes six, prior art references in the prior art to arrive at the presently claimed method is the very essence of the use of improper hindsight to pick and choose among isolated disclosures to deny that the claimed method is non-obvious. As such, Applicants respectfully

suggest independent claims 8, 16 and 23 are allowable over the combination of references.

Further, even assuming that the references are properly combinable to establish a *prima facie* case of obviousness as to the presently claimed method, which the Applicants do not concede, Applicants may supply a showing of facts that rebuts the *prima facie* case.

> "Rebuttal is merely 'a showing of facts supporting the obviousness conclusion' and may relate to any of the Graham factors including so-called secondary considerations ... If rebuttal evidence of adequate weight is produced, the holding of *prima facie* obviousness, being but a legal inference from previously uncontradicted evidence, is dissipated. Regardless of whether the *prima facie* case could have been characterized as strong or weak, the examiner must consider all evidence anew."

In re Piasecki, 745 F.2d 1468, 222 USPQ 785 (Fed Cir. 1985). Evidence to rebut a *prima facie* case of obviousness is usually supplied in the form of affidavits or declarations under Rule 132. 37 C.F.R. §1.132.

In support of non-obviousness, Applicants will provide a Rule 1.132 Affidavit that establishes that the presently claimed method has achieved outstanding commercial success and satisfies a long-felt need in the industry. Spray application equipment utilizing the presently claimed method, as in claims 8, 16, and 23, has demonstrated improved durability as compared with aluminum bell cups or titanium bell cups available in the prior art, which typically wore out in Applicant's manufacturing facilities within weeks of first use. In addition, the Assignee of the present invention has demonstrated commercial success in the licensing of the technology described in presently presented claims 8, 16 and 23. These are two examples of so-called secondary considerations that may be used to rebut a *prima facie* case of nonobviousness. These factors also support that proposition that the Examiner

has used improper hindsight to pick and choose among isolated disclosures to deny that the claimed method is non-obvious.

Applicants respectfully suggest that these facts have established the required factual showing under Rule 132 to rebut a *prima facie* case of nonobviousness, therein making claims 8, 16 and 23 allowable over the cited prior art. Reconsideration of independent claims 8, 16, and 25, along with dependent claims there from, is respectfully requested.

Applicants have also added new dependent claims 56-61 by the foregoing amendment. These newly presented claims further limit independent claims 8 and16. As claims 8 and 16 are allowable as described above, Applicants respectfully submit that claims 56-61 are similarly allowable. Consideration of new claims 56-61 is respectfully requested.

Applicants have also added new independent method claims 62 and 65 by the foregoing amendment. Independent claim 62 utilizes a tungsten-doped carbon coating applied to the outer surface of spray application equipment by a similar method to claim 25, while claim 65 introduces a titanium-doped carbon coating. As claim 25 is allowable as described above, Applicants respectfully submit that claims 62-67 are allowable over the prior art. Consideration of claims 62-67 is respectfully requested.

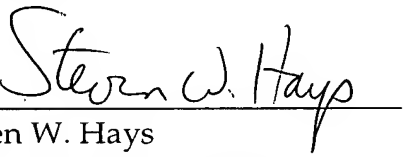
In view of the foregoing amendments and remarks, Applicants submit that claims 8-13, 15-22, 24-30, 32, 33 and 56-67 are all allowable. Applicants respectfully suggests to the Examiner that they are prepared to file an appeal if necessary to move this case towards allowance, and thus respectfully suggests that the Examiner withdraws his present rejections as being improper and based on incorrect reasoning. Accordingly, allowance of these claims and passage of the application to issuance are respectfully solicited.

The Commissioner is authorized to charge any additional claim fees, which may be required, or credit any overpayment, to Deposit Account No. 06-1510 or 06-1505 in the name of Ford Global Technologies, L.L.C.

The Examiner is invited to telephone the Applicant's undersigned attorney at (248) 223-9500 if any unresolved matters remain.

Respectfully submitted,

ARTZ & ARTZ, P.C.



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